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April 15, 1996

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APR 16 1996

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

**HAND-DELIVERED**

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, D.C. 20554

Re: Ex Parte Presentation in PR Docket No. 92-235

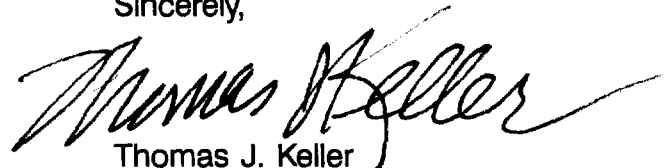
Dear Mr. Caton:

Pursuant to Section 1.1206(a)(2) of the Commission's Rules, this is to notify you that the undersigned, representing the Association of American Railroads (AAR), met on Monday, April 15, 1996, with Rudy Baca, Office of Commissioner Quello, to discuss the issues raised in the Report and Order and Further Notice of Proposed Rule Making in this docket. AAR reiterated the points raised in its Comments and Reply Comments on the Report and Order and Further Notice of Proposed Rule Making, and in AAR's Supplemental Comments filed on April 12, 1996, a copy of which is enclosed herewith.

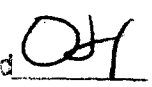
Pursuant to Section 1.1206(a), two copies of this notice are being filed for placement in the docket of this proceeding.

Should any questions arise concerning this notice, please contact the undersigned.

Sincerely,

  
Thomas J. Keller  
Counsel for AAR

Enclosure

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FEDERAL COMMUNICATIONS COMMISSION  
SECRETARY

In the Matter of )  
)  
Replacement of Part 90 )  
by Part 88 to Revise the )  
Private Land Mobile )  
Services and Modify the )  
Policies Governing Them ) PR Docket No. 92-235  
)  
and )  
)  
Examination of Exclusivity )  
and Frequency Assignment )  
Policies of the Private )  
Land Mobile Radio Services )

To: The Commission

**Supplemental Comments of  
The Association of American Railroads**

The Association of American Railroads (AAR), by its attorneys and pursuant to Section 1.415 of the Rules of the Federal Communications Commission, hereby submits these Supplemental Comments in the above-captioned Report and Order and Further Notice of Proposed Rulemaking (R&O and FNPRM). In these Supplemental Comments AAR urges the Commission to change the placement of the Railroad Radio Service (currently at Section 90.91 of the FCC's Rules) from Part 90 to a new, separate rule part. Alternatively, the FCC should place the Railroad Radio Service in Part 87, along with Aviation Services.

**I. Introduction and Summary**

AAR has decided to file these Supplemental Comments after carefully reviewing all of the comments and reply comments filed in this proceeding regarding

consolidation of the 20 land mobile radio user groups into a smaller number of groups. This analysis revealed that all industrial and land transportation user groups -- except one -- responded that they are willing to accept the interference to their communications that inevitably will occur because of sharing with dissimilar user groups resulting from the FCC's consolidation proposal. The sole exception was the railroad industry.

Alone among all the industrial and land transportation users groups, the railroad industry is of the view that considerations of safety dictate against commingling its mobile radio channels with those of other users. As AAR explained in detail in its comments and reply comments, consolidation would allow other users to occupy and operate on mobile radio channels used for critical railroad safety-related applications.<sup>1/</sup> This situation would inevitably mean interference to railroad communications, causing serious risk of injury to passengers, crew and cargo.<sup>2/</sup>

Recent tragic events -- including the Amtrak/MARC train accident at Silver Spring -- have placed a spotlight on issues of railroad safety. Now the railroads are even more firmly convinced that they cannot accept the clear threat to public safety that the FCC's consolidation proposal would entail. Because of this fact and because the railroads are unique among all "Private Land Mobile" user groups described in Part 90, the FCC should move the Railroad Radio Service out of Part 90 of the Rules and

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1/ Comments of AAR in PR Docket No. 92-235 (filed November 20, 1995) at 13-28; Reply Comments of AAR in PR Docket No. 92-235 (filed January 16, 1996) at 3-18.

2/ AAR's Comments and Reply Comments provide an extended analysis of these concerns. Those submissions are herein incorporated by reference.

into a separate rule part. In this regard, the railroads' use of mobile radio technology to control and coordinate the movement of vehicles is more like the use of mobile radio by the aviation and marine industries -- both of which are covered in the FCC's rules in separate rule parts -- in contrast to the typical land mobile user who employs mobile radio only for dispatch functions. Moving the Railroad Radio Service to a separate rule part would allow the FCC to proceed with consolidation of the other land mobile radio services, while at the same time preserving the integrity of the channels allocated to the Railroad Radio Service.

The approach recommended in these Supplemental Comments does not require any further notice or comment under the Administrative Procedure Act. The Commission has already given notice and sought and received comment on the substantive question here, i.e., whether to commingle the channels in the Railroad Radio Service with those of other user groups. Having previously commented substantively as to what to do (namely, preserve the integrity of the Railroad Radio Service), AAR in these Supplemental Comments is merely recommending a procedure for how to do it.

## **II. The Record in This Proceeding Supports Preservation of the Railroad Radio Service**

It is clear from the all comments and reply comments filed in this proceeding that the unique characteristics of rail transportation require the railroad industry to

place a premium on reliable communications;<sup>3/</sup> and the record reflects a fundamental difference between the railroads and other land mobile radio users. The size and massive weight of rail equipment as well as high train speeds make train operations an extremely powerful and potentially destructive force. This potential is magnified by the long stopping distances inherent in the operation of heavy rolling stock using steel wheels on steel rail. For example, a fully loaded freight train requires over a mile to stop. In addition, trains are restricted to operating on the railroad right-of-way and, unlike trucks, taxicabs and other land-based vehicles, cannot be steered to avoid hazards or obstacles.

The combination of these factors means that train operators cannot rely on sight alone for accident avoidance. Advance radio warning of hazards is critical, as is the ability of dispatchers to communicate with train operators via radio regarding train movements. For example, dispatchers use mobile radio to relay track "warrants" to train operators authorizing passage along a particular right-of-way, or stop orders to halt movement to allow passage of another train along the track, as well as to receive and relay requests from the train and maintenance crews for emergency assistance. Mobile radio is also used to allow train-to-train communications between train operators regarding train movements, the state of the track, and hazards or obstacles along the right-of-way. If such messages are blocked or obscured due to interference, disastrous results can occur, especially given the fact that trains often transport

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3/ See Railroad Communications and Train Control, Federal Railroad Administration, Department of Transportation Report to Congress, July 1994 at 1-2.

hazardous materials through densely populated urban areas. Because of all these factors and the potential dangers inherent in rail transportation, the use of mobile radio for safety applications is much more integral to the minute-to-minute operations of railroads than for all other land mobile users.

The distinctiveness of railroad use of mobile radio is further evident in the variety of train-specific radio devices. For example, railroads rely on mobile radio for defect detectors placed along the railroad right-of-way. These detectors alert the train crew to overheated wheel bearings, malfunctioning brakes, shifted cargo and dragging or loose equipment on the undercarriage of trains. If the transmission of messages from defect detectors to crew were to be blocked or obscured due to interference, the crew members would proceed on course without knowledge of a serious hazard, resulting potentially in derailment.

Mobile radio links are also used for the remote control of "slave" locomotives -- additional locomotives placed in the middle of a train without crew members. This remote control function includes auxiliary starting, pulling and braking actions, among others. Needless to say, derailments can occur if the forces applied to the train by the lead and slave locomotives are not perfectly synchronized and coordinated. Any interference with or degradation of this communication link between the lead and slave locomotives risks such a derailment. Yet another train-specific radio application is the two-way end-of-train device which allows the train operator at the front of the train to apply a braking mechanism at the rear of the train via a mobile radio link. All of these train-specific functions serve to further highlight the distinction between railroads and

other land mobile radio users whose typical use of mobile radio is for conventional dispatcher-to-driver functions.

The railroads are unique in their use of mobile radio even when compared to other "priority" users, such as the utilities and the pipelines. There is absolutely no doubt that there are critical safety-related functions in all three industries -- railroads, utilities and pipelines -- which depend very heavily on fixed radio systems. All three industries use point-to-point microwave relay systems for long distance control of essential operations -- railroads for signals and switching; pipelines for controlling valves, compressors and remote metering; and electric utilities for circuit breaker and substation control. But the situation is different when it comes to the use of mobile radio systems. Unlike the utility and pipeline businesses, the railroad business is fundamentally vehicular (i.e., mobile) by its very nature. Railroads rely directly on mobile radio for the safe operation and provision of their essential business -- the movement of trains. Thus, safety-related train movement directives, defect detectors, slave locomotive controls, and end-of-train devices, among others -- all of which require mobile radio links -- are essential to the constant operation of rail transport. In contrast, the core business of the utilities and pipelines is not vehicular in nature -- their mission is to move electricity, gas and oil, and, unlike the railroads, they do not rely directly on mobile radio for the actual delivery of their products or services. Indeed, the comments of those users demonstrate that their use of mobile radio is

generally ancillary to their essential business, e.g., to dispatch repair crews in the event of a disruption in service or to aid in exploration activities.<sup>4/</sup>

This characterization is not meant to diminish in any way those users' claims that mobile radio has important safety functions for their operations. It does show, however, that the railroads are fundamentally different from those other users in the nature of their business (i.e., vehicular vs. non-vehicular) and in the consequent scope and intensity of their use of safety-related mobile radio. That difference in use explains the different responses of these groups to the FCC's consolidation plan, and their apparent willingness to go along with some degree of consolidation and sharing with dissimilar users. For example, dispatching repair crews in the event of a pipeline break or electrical outage is an intermittent and sporadic use which may command a priority when the event occurs, but which may allow sharing of mobile channels at all other times. In contrast, the railroad industry makes intensive use of mobile radio for train operations and critical safety-related purposes around the clock.

### **III. The Frequencies of the Railroad Radio Service Should be in a Separate Rule Part, Just Like Those of the Aviation Industry**

A search for analogous users reveals that the railroads share the greatest functional similarities with the Aviation Service contained in Part 87 of the Rules, not

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<sup>4/</sup> Comments of PacifiCorp in PR Docket No. 92-235 (filed November 20, 1995) at 1; Comments of American Gas Association in PR Docket No. 92-235 (filed November 20, 1995) at 3; Comments of UTC in PR Docket No. 92-235 (filed November 20, 1995) at 7; Comments of American Petroleum Institute in PR Docket No. 92-235 (filed November 20, 1995) at 3.



with other land mobile radio users. In both the railroad and the aviation industries, vehicular movement is the core business and mobile radio is essential for its safe execution. The safety-related functions of railroad mobile radio are inherently similar to air traffic control and aeronautical en route safety functions. Both industries use mobile radio to maintain safe operating distances between vehicles that often have no other means of safely detecting each other and avoiding conflict. Thus, just as air traffic controllers rely on mobile radio to direct aircraft movement to help ensure adequate separation between aircraft, so do train dispatchers rely on mobile radio communications to direct and monitor train movements. Both industries also rely on mobile radio for hazard and defect detection and system monitoring, as well as for emergency response. Radio is essential to the airlines, just as it is to the railroads, because sight alone is not an adequate tool for accident avoidance. Indeed, the railroad industry may have an even more vital need for reliable radio communications due to the limited steering options available to a train engineer who operates on a fixed right-of-way.

Because both these industries rely on mobile radio to perform essential vehicle control safety functions, constant access to clear channels is a critical operational concern. If clear channels are not immediately available or if time sensitive messages relaying safety information are blocked, disasters can occur. For these reasons, in the airline industry, air traffic control channels are under the exclusive control of the Federal Aviation Administration (FAA), and aeronautical en route channels are under

the control of ARINC, Inc. The latter service is contained in a separate rule part, Part 87.

Given the fact that railroad use of mobile radio is much more analogous to air traffic control and aeronautical en route systems than to any other land mobile radio service, the Railroad Radio Service should be removed from Part 90 and placed within a separate rule part. This change would entail moving Section 90.91 in its entirety out of Part 90 and relocating it either within a newly created rule part, such as Part 89, or as Subpart T within Part 87.<sup>5/</sup> Appendix A sets forth the text of the proposed rule part. The rule part in which the Railroad Radio Service should be placed should incorporate by reference the definitions presently contained in Section 90.7, as well as relevant technical standards and rules governing applications and authorizations as set forth in Part 90, Subparts G-T. In addition, the rule part should reflect the fact that frequencies in the Railroad Radio Service will be available under the present inter-service sharing rule<sup>6/</sup> (or a comparable successor rule) to Special Emergency Radio Service and Industrial and Land Transportation users who can accompany their requests with (1) a determination that there are no satisfactory frequencies available within the applicant's own radio service/pool; (2) a demonstration that the frequency(ies) requested in the Railroad Radio Service are not assigned in the Railroad Radio Service in the area of desired operation; and (3) a statement or showing that

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5/ AAR is not proposing a sharing arrangement between railroad and aviation channels. The channels currently assigned to both services would maintain their present eligibility restrictions.

6/ Section 90.176(b).

the proposed use of the assignment will not violate any of the technical limitations applicable in the Railroad Radio Service.

This move would ensure that railroad channels will continue to be assigned by a centralized and representative frequency coordinator. The existence of a centralized coordinator for the Railroad Radio Service, as with the air traffic control and aeronautical en route frequencies, has enabled users of those frequencies to operate free from interference from other radio-service entities.<sup>7/</sup> Centralized frequency coordination in the Railroad Radio has also facilitated the development and implementation of safety-related radio technologies.<sup>8/</sup> This system of centralized frequency coordination has served the railroads well for the past fifty years and should not be altered.

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7/ See for example, the discussion at 17-18 of AAR's comments, relating an instance in which UTC, The Telecommunications Association, requested a railroad maintenance-of-way radio channel on behalf of Connecticut Natural Gas (CNG). CNG conceded in its own filings that its operations could cause interference directly along the railroad right-of-way. Without a system of centralized and representative frequency coordination, this channel might have been assigned to a non-railroad user by a frequency coordinator, such as UTC, that is unfamiliar with railroad needs. Such an assignment would inevitably have resulted in interference to radio communications used to protect maintenance crews working on the railroad right-of-way.

8/ For example, the Federal Railroad Administration highlighted the important strategic planning role AAR has played in the development of Positive Train Control, a radio-based system architecture for preventing collisions between trains, in its 1994 Report to Congress at 50-52.

#### **IV . AAR's Request is Not Subject to the Notice and Comment Requirements of the Administrative Procedure Act**

AAR's request to move the Railroad Radio Service from Section 90.91 to a new rule part is not subject to the notice and comment requirements of the Administrative Procedure Act (APA). Section 553(b) of the APA, 5 U.S.C. § 553(b), exempts from the notice and comment requirements "interpretive rules, general statements of policy, or rules of agency organization, procedure, or practice." In determining whether a rule is procedural or substantive in nature, the courts have looked to whether the agency rule or action "alter[s] the rights or interests of parties..."<sup>9/</sup> In this regard, the courts have noted that a rule can be procedural even though "it may alter the manner in which the parties present themselves or their viewpoints to the agency."<sup>10/</sup>

Judged by this standard, the proposal recommended in these Supplemental Comments represents merely a change in format, not in substance. The Railroad Radio Service, currently in Section 90.91, would simply be relocated from Part 90 to a new rule part. The rules themselves would thus remain the same, only their location would change. The change in location effects no substantive change in the rights or

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9/ Neighborhood TV Co., Inc. v. FCC, 742 F.2d 629, 637 (D.C. Cir. 1984)(FCC's interim processing procedures for television transmitter licenses not subject to notice and comment); Jem Broadcasting Co., Inc. v. FCC, 22 F.3d 320 (D.C. Cir. 1994)(FCC's "hard look" rules not subject to notice and comment); Kessler v. FCC, 326 F.2d 673 (D.C. Cir. 1963)(order imposing freeze on acceptance of radio broadcast station applications not subject to notice and comment); Ranger v. FCC, 294 F.2d 240 (D.C. Cir. 1961)(amendment to regulations announcing new cut-off date procedure not subject to notice and comment).

10/ Jem Broadcasting Co., Inc. v. FCC, 22 F.3d at 326.


interests of the parties concerned. Accordingly, the proposed format change does not trigger the notice and comment provisions of the APA.

### **Conclusion**

In the wake of a number of recent railroad accidents, public attention has been refocused on issues of railroad safety. Railroad use of mobile radio communications has evolved over the last fifty years as an essential tool in the railroads' safety management program. When this use is compared to that of the other land mobile radio services, it is clear that the railroads stand apart both in the nature and scope, as well in the intensity and variety, of their use of mobile radio. This fundamental distinction motivates AAR's request that the Commission move Section 90.91 out of Part 90 and into either a separate rule part or a new subpart of Part 87. This relocation would allow the railroads to operate free from disruption of their critical safety-related communications.

Respectfully submitted,

**ASSOCIATION OF AMERICAN RAILROADS**

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April 12, 1996

Its Attorneys

## **APPENDIX A**

### **PART 89-RAILROAD RADIO SERVICE**

#### **Subpart A-General Information**

**Sec.**

- 89.1 Basis and purpose**
- 89.3 Other applicable rule parts**
- 89.5 Definitions**

#### **Subpart B-Railroad Radio Service**

- 89.7 Railroad Radio Service**
- 89.9 Applicable Requirements**

#### **Subpart A-General Information**

##### **§ 89.1 Basis and purpose.**

(a) *Basis.* The rules in this part are promulgated under Title III of the Communications Act of 1934, as amended which vests authority in the Federal Communications Commission to regulate radio transmission and to issue licenses for radio stations. All rules in this part are in accordance with applicable treaties and agreements to which the United States is a party.

(b) *Purpose.* This part states the conditions under which radio communications systems may be licensed and used in the Railroad Radio Service. These rules do not govern radio systems employed by agencies of the Federal Government.

##### **§ 89.3 Other applicable rule parts**

Other Commission rule parts of importance that may be referred to with respect to licensing and operations in radio services governed under this part include the following:

(a) Part O of the Commission's Rules describes the Commission's organization and delegations of authority. This part also lists available Commission publications, and standards and procedures for access to Commission records, and location of Commission field offices.

(b) Part 1 of this chapter includes rules of practice and procedure for application signature requirements, adjudicatory proceedings including hearing proceedings, and rule making proceedings; procedures for reconsideration and review of the Commission's actions; provisions concerning violation notices and forfeiture proceedings; and the environmental processing requirements that, if applicable, must be complied with prior to initiating construction.

(c) Part 2 contains the table of frequency allocations and special requirements in International regulations, agreements and treaties. This part also contains standards and procedures concerning marketing of radio frequency devices, and for obtaining equipment type acceptance and type approval.

(d) Part 5 contains standards and procedures for obtaining experimental authorizations.

(e) Part 15 provides for the operation of incidental and restricted radio frequency devices that do not require an individual license.

(f) Part 17 contains detailed requirements for construction, marking, and lighting of antenna towers.

(g) Part 18 deals with the operation of industrial, scientific, and medical (ISM) devices that are not intended for radio communication.

(h) Part 68 contains technical standards for connection of private land mobile radio equipment to the public switched network.

(i) Part 94 governs licensing and operation of private operational-fixed radio stations on frequencies in the microwave spectrum above 928 MHz.

#### **§ 89.5 Definitions**

(a) The definitions contained in Section 90.7 of the Commission's Rules shall also be applicable to this Rule Part.

### **Subpart B-Railroad Radio Service**

#### **§ 89.7 Railroad Radio Service**

(a) *Eligibility.* Railroad common carriers which are regularly engaged in the transportation of passengers or property when such passengers or property are transported over all or part of their route by railroad are eligible to hold authorizations in the Railroad Radio Service to operate radio stations for transmission of communications and to assure safety of operations essential to such activities of the licensee.

(b) *Frequencies available.* The following table indicates frequencies available for assignment to stations in the Railroad Radio Service together with the class of station(s) to which they are normally assigned; and the specific assignment limitations, which are explained in paragraph (d) of this section:

## Railroad Radio Service Frequency Table

Frequency or band	Class of station(s)	Limitations
<b>Megahertz:</b>		
72.0 to 76.0	Operational fixed	1
72.44	Mobile	2
72.48	do	2
72.52	do	2
72.56	do	2
72.60	do	2
74.61	do	21
74.63	do	21
74.65	do	21
74.67	do	21
74.69	do	21
74.71	do	21
74.73	do	21
74.75	do	21
74.77	do	21
74.79	do	21
75.21	do	21
75.23	do	21
75.25	do	21
75.27	do	21
75.29	do	21
75.31	do	21
75.33	do	21
75.35	do	21
75.37	do	21
75.39	do	21
75.44	do	2
75.48	do	2
75.52	do	2
75.56	do	2
75.60	do	2
150 to 170	Base or mobile	23
160.215	do	3, 4
160.2225	do	3, 4, 18
160.230	do	3, 4
160.2375	do	3, 4, 18
160.245	do	3, 4



Frequency or band	Class of station(s)	Limitations
<b>Megahertz:</b>		
160.2525	do	3, 4, 18
160.260	do	3, 4
160.2675	do	3, 4, 18
160.275	do	3, 4
160.2825	do	3, 4, 18
160.290	do	3, 4
160.2975	do	3, 4, 18
160.305	do	3, 4
160.3125	do	3, 4, 18
160.320	do	3, 4
160.3275	do	3, 4, 18
160.335	do	3, 4
160.3425	do	3, 4, 18
160.350	do	3, 4
160.3575	do	3, 4, 18
160.365	do	3, 4
160.3725	do	3, 4, 18
160.380	do	3, 4
160.3875	do	3, 4, 18
160.395	do	3, 4
160.4025	do	3, 4, 18
160.410	do	3, 4, 5
160.4175	do	3, 4, 5, 18
160.425	do	3, 4, 5
160.4325	do	3, 4, 5, 18
160.440	do	3, 4, 5
160.4475	do	3, 4, 5, 18
160.455	do	3, 4, 5
160.4625	do	3, 4, 5, 18
160.470	do	3, 4, 5
160.4775	do	3, 4, 5, 18
160.485	do	3, 4, 5
160.4925	do	3, 4, 5, 18
160.500	do	3, 4, 5
160.5075	do	3, 4, 5, 18
160.515	do	3, 4, 5
160.5225	do	3, 4, 5, 18
160.530	do	3, 4, 5
160.5375	do	3, 4, 5, 18
160.545	do	3, 4, 5
160.5525	do	3, 4, 5, 18
160.560	do	3, 4, 5
160.5675	do	3, 4, 5, 18
160.575	do	3, 4, 5
160.5825	do	3, 4, 5, 18
160.590	do	3, 4, 5
160.5975	do	3, 4, 5, 18
160.605	do	3, 4, 5
160.6125	do	3, 4, 5, 18

Frequency or band	Class of station(s)	Limitations
<b>Megahertz:</b>		
160.620	do	3, 4
160.6275	do	3, 4, 18
160.635	do	3, 4
160.6425	do	3, 4, 18
160.650	do	3, 4
160.6575	do	3, 4, 18
160.665	do	3, 4
160.6725	do	3, 4, 18
160.680	do	3, 4
160.6875	do	3, 4, 18
160.695	do	3, 4
160.7025	do	3, 4, 18
160.710	do	3, 4
160.7175	do	3, 4, 18
160.725	do	3, 4
160.7325	do	3, 4, 18
160.740	do	3, 4
160.7475	do	3, 4, 18
160.755	do	3, 4
160.7625	do	3, 4, 18
160.770	do	3, 4
160.7775	do	3, 4, 18
160.785	do	3, 4
160.7925	do	3, 4, 18
160.800	do	3, 4
160.8075	do	3, 4, 18
160.815	do	3, 4
160.8225	do	3, 4, 18
160.830	do	3, 4
160.8375	do	3, 4, 18
160.845	do	3, 4
160.8525	do	3, 4, 18
160.860	do	3, 4, 6
160.8675	do	3, 4, 6, 18
160.875	do	3, 4, 6
160.8825	do	3, 4, 6, 18
160.890	do	3, 4, 6
160.8975	do	3, 4, 6, 18
160.905	do	3, 4, 6
160.9125	do	3, 4, 6, 18
160.920	do	3, 4, 6
160.9275	do	3, 4, 6, 18
160.935	do	3, 4, 6
160.9425	do	3, 4, 6, 18
160.950	do	3, 4, 6
160.9575	do	3, 4, 6, 18
160.965	do	3, 4, 6
160.9725	do	3, 4, 6, 18
160.980	do	3, 4, 6

Frequency or band	Class of station(s)	Limitations
<b>Megahertz:</b>		
160.9875	do	3, 4, 6, 18
160.995	do	3, 4, 6
161.0025	do	3, 4, 6, 18
161.010	do	3, 4, 6
161.0175	do	3, 4, 6, 18
161.025	do	3, 4, 6
161.0325	do	3, 4, 6, 18
161.040	do	3, 4, 6
161.0475	do	3, 4, 6, 18
161.055	do	3, 4, 6
161.0625	do	3, 4, 6, 18
161.070	do	3, 4, 6
161.0775	do	3, 4, 6, 18
161.085	do	3, 4, 6
161.0925	do	3, 4, 6, 18
161.100	do	3, 4, 6
161.1075	do	3, 4, 6, 18
161.115	do	3, 4, 6
161.1225	do	3, 4, 6, 18
161.130	do	3, 4, 6
161.1375	do	3, 4, 6, 18
161.145	do	3, 4, 6
161.1525	do	3, 4, 6, 18
161.160	do	3, 4, 6
161.1675	do	3, 4, 6, 18
161.175	do	3, 4, 6
161.1825	do	3, 4, 6, 18
161.190	do	3, 4, 6
161.1975	do	3, 4, 6, 18
161.205	do	3, 4, 6
161.2125	do	3, 4, 6, 18
161.220	do	3, 4, 6
161.2275	do	3, 4, 6, 18
161.235	do	3, 4, 6
161.2425	do	3, 4, 6, 18
161.250	do	3, 4, 6
161.2575	do	3, 4, 6, 18
161.265	do	3, 4, 6
161.2725	do	3, 4, 6, 18
161.280	do	3, 4, 6
161.2875	do	3, 4, 6, 18
161.295	do	3, 4, 6
161.3025	do	3, 4, 6, 18
161.310	do	3, 4, 6
161.3175	do	3, 4, 6, 18
161.325	do	3, 4, 6
161.3325	do	3, 4, 6, 18
161.340	do	3, 4, 6
161.3475	do	3, 4, 6, 18

Frequency or band	Class of station(s)	Limitations
<b>Megahertz:</b>		
161.355	do	3, 4, 6
161.3625	do	3, 4, 6, 18
161.370	do	3, 4, 6
161.3775	do	3, 4, 6, 18
161.385	do	3, 4, 7
161.3925	do	3, 4, 7, 18
161.400	do	3, 4, 7
161.4075	do	3, 4, 7, 18
161.415	do	3, 4, 7
161.4225	do	3, 4, 7, 18
161.430	do	3, 4, 7
161.4375	do	3, 4, 7, 18
161.445	do	3, 4, 7
161.4525	do	3, 4, 7, 18
161.460	do	3, 4, 7
161.4675	do	3, 4, 7, 18
161.475	do	3, 4, 7
161.4825	do	3, 4, 7, 18
161.490	do	3, 4, 7
161.4975	do	3, 4, 7, 18
161.505	do	3, 4, 7
161.5125	do	3, 4, 7, 18
161.520	do	3, 4, 7
161.5275	do	3, 4, 7, 18
161.535	do	3, 4, 7
161.5425	do	3, 4, 7, 18
161.550	do	3, 4, 7
161.5575	do	3, 4, 7, 18
161.565	do	3, 4, 7
169 to 172	Mobile, operational fixed	8
220-222	Base and mobile	20
406 to 413	Operational fixed	8
450 to 470	Fixed, base, or mobile	9, 23
452.3125	Mobile	24
452.325	Base or mobile	10
452.33125	do	10, 22
452.33750	do	10, 18
452.34375	do	10, 22
452.3625	Mobile	24
452.375	Base or mobile	10
452.38125	do	10, 22
452.38750	do	10, 18
452.39375	do	10, 22
452.4125	Mobile	24
452.425	Base or mobile	10
452.43125	do	10, 22
452.43750	do	10, 18
452.44375	do	10, 22
452.4625	Mobile	24

Frequency or band	Class of station(s)	Limitations
<b>Megahertz:</b>		
452.475	Base or mobile	10
452.48125	do	10, 22
452.48750	do	10, 18
452.49375	do	10, 22
452.7625	Mobile	24
452.775	Base or mobile	10
452.78125	do	10, 22
452.78750	do	10, 18
452.79375	do	10, 22
452.8125	Mobile	24
452.825	Base or mobile	10
452.83125	do	10, 22
452.83750	do	10, 18
452.84375	do	10, 22
452.8625	Mobile	24
452.875	Base or mobile	10
452.88125	do	10, 22
452.88750	do	10, 18
452.89375	do	10, 22
452.900	do	
452.90625	do	22
452.91250	do	18
452.91875	do	22
452.925	do	11
452.93125	do	11, 22
452.93750	do	11, 18
452.94375	do	11, 22
452.950	do	11
452.95625	do	11, 22
452.96250	do	11, 18
452.96875	do	11, 22
457.3125	Mobile	24
457.325	do	10
457.33125	do	10, 22
457.33750	do	10, 18
457.34375	do	10, 22
457.3625	do	24
457.375	do	10
457.38125	do	10, 22
457.38750	do	10, 18
457.39375	do	10, 22
457.4125	do	24
457.425	do	10
457.43125	do	10, 22
457.43750	do	10, 18
457.44375	do	10, 22
457.4625	do	24
457.475	do	10
457.48125	do	10, 22

Frequency or band	Class of station(s)	Limitations
<b>Megahertz:</b>		
457.48750	do	10, 18
457.49375	do	10, 22
457.7625	do	24
457.775	do	10
457.78125	do	10, 22
457.78750	do	10, 18
457.79375	do	10, 22
457.8125	do	24
457.825	do	10
457.83125	do	10, 22
457.83750	do	10, 18
457.84375	do	10, 22
457.8625	do	24
457.875	do	10
457.88125	do	10, 22
457.88750	do	10, 18
457.89375	do	10, 22
457.900	do	
457.90625	do	22
457.91250	do	18
457.91875	do	22
457.925	do	11
457.93125	do	11, 22
457.93750	do	11, 18
457.94375	do	11, 22
457.950	do	11
457.95625	do	11, 22
457.96250	do	11, 18
457.96875	do	11, 22
470 to 512	Base or mobile	12
806 to 821	Mobile	13
851 to 866	Base or mobile	13
896 to 901	Mobile	13
928 and above	Operational fixed	14
929-930	Base only	19
935 to 940	Base or mobile	13
1427 to 1435	Operational fixed, base or mobile	15
2450 to 2500	Base or mobile	16
8400 to 8500	do	17
10,550 to 10,680*	do	

<\*> The frequencies in the band 10.55-10.68 GHz are available for Digital Termination Systems and for associated intermodal links in the Point-to-Point Microwave Radio Service. No new licenses will be issued under this subpart but current licenses will be renewed.

(c) Explanation of assignment limitations appearing in the frequency table of paragraph (b) of this section:

(1) The frequencies available for assignment to operational-fixed stations in the band 72.0 to 76.0 MHz are listed in §90.257(a)(1). These frequencies which are shared with other services, are available only in accordance with the provisions of §90.257.

(2) This frequency is available on a shared basis in the Manufacturers, Forest Products, Special Industrial, Railroad and Fire Radio Services and interservice coordination is required. All communications must be conducted within the boundaries or confines of railroad terminals or yards. All operations on this frequency are subject to the provisions of §90.257(b).

(3) This frequency may be used for the following:

(i) End-to-end, fixed point-to-train, or train-to-train communications in connection with the operation of railroad trains over a track, in yards, or tracks extending through yards and between stations upon which trains are operated by timetable, train order, or both, or the use of which is governed by block signals.

(ii) Intercommunication between adjacent base stations, provided interference is not caused to communications involving radio stations aboard railroad rolling stock.

(iii) Transmission of tone signals for signaling purposes or for remote control of locomotives, including slave locomotives placed within a train to assist the lead locomotive by providing, among other functions, auxiliary starting, pulling, and braking actions; and radio controlled cab indicator devices that are placed within a locomotive to give visual signals to the operator of the locomotive.

(4) This frequency may also be used for the transmission of tone or voice communications, including such communications when pre-recorded, for purposes of automatically indicating abnormal conditions of trackage and railroad rolling stock when in motion, on a secondary basis to other stations on this frequency. All such operations shall be subject to the following.

(i) The output power shall not exceed 30 watts.

(ii) The bandwidth used shall not exceed that authorized to the licensee for voice transmissions on the frequency concerned.

(iii) The station shall be so designed and installed that it can normally be activated only by its associated automatic control equipment and, in addition, it shall be equipped with a time delay or clock device which will deactivate the station within three (3) minutes following activation by the last car in the train.

(iv) Stations authorized pursuant to the provisions of this subparagraph are exempt from the station identification requirements of §90.425.

(5) This frequency is shared with and must be coordinated with the Special Industrial Radio Service in Puerto Rico and the Virgin Islands.

(6) In Puerto Rico and the Virgin Islands only, this frequency is available on a shared basis with remote pickup broadcast stations.

(7) In Puerto Rico and the Virgin Islands only, this frequency is not available to stations operating in the Railroad Radio Service.

(8) Frequencies in this band will be assigned only for transmitting hydrological or meteorological data or for low power wireless microphones in accordance with the provisions of §90.265.

(9) The requirements for secondary fixed use of frequencies in this band are set forth in §90.261.

(10) This frequency is shared in the Motor Carrier and Railroad Radio Services. It may be assigned only when all of the frequencies in the 450-470 MHz band allocated to the service in which the applicant is primarily eligible are assigned within 56 km (35 mi.) of the proposed base station.

(11) This frequency may be assigned primarily for stations used for the purpose of controlling slave locomotives that are placed within a train to assist the lead locomotive by providing, among other functions, auxiliary starting, pulling, and braking actions. Additionally, on a secondary basis this frequency may be assigned for remote control of all types of locomotives and, within a railroad yard or terminal area, for remote control of cab indicator devices placed within a locomotive to give visual signals to the operator of the locomotive. (A1, A2, F1 or F2 emissions may be authorized.)

(12) Subpart L contains rules for assignment of frequencies in the 470-512 MHz band.

(13) Subpart S contains rules for assignment of frequencies in the 806-821/851-866 and 896-901/935-940 MHz bands.

(14) Assignment of frequencies above 928 MHz for operational-fixed stations is governed by Part 94 of this chapter.

(15) This frequency band is available to stations in this service subject to the provisions of §90.259.

(16) Available only on a shared basis with stations in other services, and subject to no protection from interference due to the operation of industrial, scientific, or medical (ISM) devices. In the 2483.5-2500 MHz band, no applications for new or modification to existing stations to increase the number of transmitters will be accepted. Existing licensees as of July 25, 1985, or on a subsequent date following as a result of submitting an application for license on or before July 25, 1985, are grandfathered and their operation is co-primary with the Radiodetermination Satellite Service.

(17) Use of this frequency band is limited to developmental operation and is subject to the provisions of Subpart Q.

(18) This frequency is not available in the 150-170 MHz band until August 16, 1996. This frequency will be assigned with an authorized bandwidth not to exceed 11.25 kHz. In the 450-470 MHz band, secondary telemetry operations pursuant to §90.238(e) will be authorized on this frequency.

(19) Frequencies in this band are available only for one-way paging operations in accordance with §90.494.

(20) Subpart T contains rules for assignment of frequencies in the 220-222 MHz band.



(21) This frequency is available on a shared basis in the Power, Petroleum, Business, and Manufacturers Radio Services and interservice coordination is required. All communications must be within the boundaries or confines of railroad terminals or yards. Operations on this frequency are subject to the provisions of §90.257(b). Pulsed modulations will not be authorized.

(22) This frequency is not available until August 16, 1996. After August 16, 1996 this frequency will be assigned with an authorized bandwidth not to exceed 6 kHz.

(23) Assignment of frequencies in this band are subject to the provisions of §90.173

(24) This frequency is available for systems first licensed prior to August 16, 1995. No new systems will be authorized after August 16, 1995, but prior authorized systems may be modified, expanded, and renewed.

(d) Additional frequencies available. In addition to the frequencies shown in the frequency table of this section, the following frequencies are available in this service: (See also §90.253.)

(1) [Reserved]

(2) Frequencies in the band 73.0-74.6 MHz may be assigned to stations authorized their use on or before December 1, 1961, but no new stations will be authorized in this band, nor will expansion of existing systems be permitted. (See also §90.257.)

(3) Base and mobile stations authorized as of April 1, 1968, to operate on frequency 161.61 MHz may continue to be authorized for such operation on a secondary basis to the Maritime Mobile Service. The licensees of such stations may renew, modify, reinstate, or assign their licenses in those cases where such assignment accompanies a change of ownership of the licensee's business to the assignee, and may expand existing systems when using that frequency; however, they will not be authorized to establish any new systems on the frequency.

(4) Stations authorized for operation on or before June 11, 1962, on the frequencies 169.575, 170.375, 171.175, 171.975 or 406.050 MHz may continue to be authorized for such operation on a secondary basis to government stations.

(5) The frequency band 33.00-33.01 MHz may be used for developmental operation subject to the provisions of Subpart Q. Any type of emission other than pulsed emission may be used if the bandwidth occupied by the emission is contained within the assigned frequency band.

(6) Frequencies in the 421-430 MHz band are available in the Detroit, Cleveland and Buffalo areas in accordance with the rules in §§90.273 through 90.281.

(e) Limitation on number of frequencies assignable. Normally only one frequency, or pair of frequencies in the paired frequency mode of operation, will be assigned from mobile service operations by a single applicant in a given area. The assignment of an additional frequency or pair of frequencies will be made only upon a satisfactory showing of need, except that:

(1) Additional frequencies above 25 MHz may be assigned in connection with operation of mobile repeaters in accordance with §90.247 notwithstanding this limitation.

(2) Frequencies in the 25-50 MHz, 150-170 MHz, 450-512 MHz and 902-928 MHz bands may be assigned for the operation of Location and Monitoring Service (LMS) systems in accordance with the provisions of Subpart M, notwithstanding this limitation.